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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,617	12/05/2003	Masataka Suzuki	06753.0571	7892

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EXAMINER

HOFFBERG, ROBERT JOSEPH

ART UNIT	PAPER NUMBER
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2835

DATE MAILED: 03/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/727,617

Applicant(s)

SUZUKI ET AL.

Examiner

Robert J. Hoffberg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 15 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Detailed Action

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Chobot et al. (US 5,743,004).

With respect to Claim 1, Chobot et al. teaches a mounting structure for an electronic component (Fig. 10, #23), comprising: a wiring circuit board (Col. 1, line 11) having one face serving as a component mount surface (#1 top) and the other face serving as a solder-dip surface (#1 bottom); a wiring portion (Fig. 9, upper, middle and lower surfaces of wiring circuit board) formed on at least one of the component mount surface and the solder-dip surface of the wiring circuit board; a through-holed portion (Fig. 9, for #26 and Fig. 11, #40) extending through the wiring circuit board and connected to be electrically conductive with the wiring portion (see Fig. 9); a heat conducting apertured portion (Fig. 9, #33) extending through the wiring circuit board and connected to be electrically conductive (Fig. 9, #27 between #33 and hole for #26) with the wiring portion, the heat conducting apertured portion being formed in the vicinity (see Fig. 9) of the through-holed portion; wherein the heat conducting apertured (Fig. 13, #40) conducts heat to (Fig. 13, squiggly lines and plated hole for #35a and Col. 9, lines 58-61) peripheral area (Fig. 10, #21 on #1 top) through-holed portion; and a lead

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portion (Fig. 9, #26) of the electronic component inserted to the through-holed portion from the component mount surface and soldered (Fig. 10, #21) to the wiring circuit board.

With respect to Claim 2, Chobot et al. further teaches a heat collector portion (Fig. 9, upper surface of wiring circuit board) extending from an end of the heat conducting apertured portion on the solder-drip surface, the heat collector portion being made of metal (Col. 2, line 17, electrically conductive material plated).

With respect to Claim 3, Chobot et al. further teaches wherein the heat collector portion is connected (see Fig. 9, #33) to be electrically conductive with an end of the through-holed portion on the solder-dip surface.

With respect to Claim 4, Chobot et al. further teaches wherein the heat conducting apertured portion is formed in a via hole (Col. 2, line 10).

3. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chobot et al. (US 5,743,004).

With respect to Claims 5-7, Chobot et al. in view of Estes et al. teach the mounting structure of the above claims. Chobot further teaches the edge distance between the via hole or holes and the through-hole being approximately 1 mm (see Fig. 2 and Col.4, lines 18-25). While Chobot et al. fails to teach the location of the holes in relationship to wiring portion, it would have been obvious to one of ordinary skill in the art at the time of the invention was made modify the mounting structure of Chobot et al. to locate the via hole or holes in the center, widthwise, longitudinal or any other position to allow the heat to be retained long enough to permit a good solder joint.

Response to Arguments

4. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amended claims 1 and 5-7 are anticipated by Chobot et al. (US 5,743,004). Fig. 13 teaches that a "heat conducting apertured portion [that] conducts heat to peripheral area of the through-holed portion".

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gohl et al. (US 4,945,451) and Tsunashima (US 3,53,664) teach a wiring board with a plated through-holed portion having a lead portion of an electrical component mounted therein and a plated heat conducting apertured portion wherein the through-holed portion and the heat conducting apertured portion are thermally connected. Estes et al. (US 5,451,720), Chamberlin et al. (US 6,235,994) and Yamaguchi (US 2004/0042180) teach thermal vias to improve the soldering process. Kametani et al. (US 5,590,030), Roessler et al. (US 6,212,071), Tanimura et al. (US 6,441,312) and Kramer et al. (US 6,574,108) teach thermal vias to dissipate heat. Herman et al. (US 6,181,551), Brinthaup et al. (US 6,521,842) and Honda et al. (6,849,805) teach using wiring portions on or in the wiring circuit board to improve the soldering process.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJH *RJH*



**LYNN FEILD
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